

## **DRAFT COMPATIBILITY DETERMINATION**

**USE:** Beach ORV use for Fishing

**REFUGE NAME:** Parker River National Wildlife Refuge

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. §715d)

**REFUGE PURPOSE:** "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." (16 U.S.C. §715d)

### **MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. (16 U.S.C. §3901(b))

### **DESCRIPTION OF USE**

#### **(a) What is the use? Is the use a priority public use?**

This use consists of anglers driving out to the beach via 4-wheel drive vehicles to surf fish. This is not a priority public use, but does facilitate fishing, which is a priority public use.

#### **(b) Where would the use be conducted?**

This use occurs along the 6.2-mile Refuge beach, mainly in the berm area, from the tide line to the base of the foredunes. Drive-on fishing is not permitted north of North Beach Access. Anglers are not allowed to drive or walk on dune habitat, however, Refuge officers have reported that some anglers do drive or park their vehicles in the foredunes during extreme high tides.

#### **(c) When would the use be conducted?**

This use occurs from July/August to October 31. The entire Refuge beach (except for a small portion off Lot 1) is closed during the piping plover nesting season. As plover pairs fledge chicks or abandon nests, portions of the Refuge beach are opened starting in July. ORV use of the beach is permitted when the entire beach is opened to public use (when the last plover chick fledges). Surf fishing is permitted 24 hours a day. This is the only activity allowed on the Refuge at night.

#### **(d) How would the use be conducted?**

ORV fishing is regulated through a fee permit system. Anglers can obtain a 2 night drive-on permit to drive their four-wheel drive vehicle (inspected and approved for beach use by Refuge staff) to the beach via one of two Beach Access trails. Once on the beach, their vehicles may be used as a mode of transportation to get to their fishing spots. Prior to Labor Day, all vehicle beach travel is prohibited from 8 am to 6 pm. Vehicles that stay on the beach during these hours will be parked in designated "daytime" parking areas.

All persons on the beach with vehicles are expected to be actively fishing at all times. Small cooking fires within metal containers are permitted. In 2004, the Refuge issued 191 permits for drive-on fishing and 161 permits for walk-on fishing.

**(e) Why is this use being proposed?**

This is a traditional activity on the Refuge that facilitates a priority public use (fishing). While there are six short boardwalks that allow access by foot to the beach, some anglers cannot easily walk out to the beach due to physical health, or do not want to make multiple trips to carry fishing gear out to the beach. Many express that ORV fishing is culturally different than fishing without an ORV (e.g. allows them the comforts of home and ability to follow schools of fish along the beach).

**AVAILABILITY OF RESOURCES:**

The Refuge maintains two over-sand access roads to provide ORV access for this activity. Staff time and resources are needed to implement the use permits and inspection of vehicles. The gatehouse is staffed from 7 a.m. to sunset. Inspections of vehicles take place at set times and are performed by the gatehouse staff with additional assistance by the officers. During the busy fishing times (after the beach opens from mid August to mid-September) extra gate staff is needed to cover the influx of surf fishers needing inspection. Inspections per vehicle can last from 10-20 minutes depending on the preparedness of the surf caster.

The Refuge has up to three law enforcement officers available for duty during the summer months. Officers spend from 4-12 hours per weekend and 8 hours per M-F work week checking the surf casters on the beach and making sure that they are complying with the sign in/sign out rule. The majority of costs associated with this activity are covered through the entrance fee and surf fishing fee programs.

**ANTICIPATED IMPACTS OF THE USE:**

Although a specific study on the effects of ORV use has not been performed on Plum Island beach, studies have been done on beaches with similar ecological characteristics. The information from those studies was used to derive the anticipated effect of ORVs use at Parker River Refuge. Studies show that off-road vehicles affect the biological as well as physical processes that take place within the beach ecosystem. Specifically, ORV use on the beach negatively affects wrack (a source of food for migratory birds), foredune growth, and the erosion/accretion processes of the beach.

*Impacts to the Beach Ecosystem*

The beach at Parker River Refuge is long and narrow. Off-road vehicles on the beach drive over the organic drift lines (wrack), breaking up detritus, dispersing organic matter, and churn up sand, causing it to dry out and lose nutrients. Refuge regulations restrict beach vehicle travel to dry sand only below the dunes. At some portions of the beach (roughly 2 mile section), this is not possible at high tide as the mean high tide comes to the base of the foredunes. As a result, the vehicles drive either on wet sand or in extreme high tides, on the foredunes (Husgen, pers. comm.. 2004).

Over the long term, ORV use can have a negative effect on foredune growth. Long term vehicle use can lead to an abrupt rather than sloping dune base, leaving the dune susceptible to wind erosion. ORV use on Refuge beach can be high, particularly on holiday weekends. In 2004, the Refuge issued 191 drive-on permits. The highest use recorded in 2004 occurred on Labor Day weekend, where 77 vehicles drove on the beach. Of those, 38 remained on the beach overnight. This level of vehicle use on the Refuge beach may have an adverse impact on the formation of the foredunes.

The tracks created by ORVs can also affect the geomorphology of the beach through sand displacement and compaction. The amount of sand displaced increases as the number of vehicles (traffic flow) increases. This displacement is most pronounced with the first few vehicles (up to 10), and is most crucial near the foredune, where the highest sand displacement occurs, leading to steeper slopes. The use of wide tires with low pressure can reduce some of these impacts (Anders and Leatherman 1987).

### *Impacts to Biological Resources*

ORV use on a beach has direct as well as indirect biological impacts. On a beach, life is concentrated in the wracks that wash up during high tide. For example, bacteria, which play a vital role in breaking down organic matter, are 1,000 times more abundant in the wrack than the bare sand. If ORVs drive over wracks, they may break it up and/or dry it out. Godfrey and Godfrey (1980) found that ORV use reduced the amount of bacteria present by 50% and the amount of diatoms in the sand by 90%. Steinback *et al.* (in press) found that while different species of invertebrates respond differently to ORV use (some populations increase while others decrease), the overall abundance of invertebrates is significantly lower in beaches with ORV use. She also found less wrack on beaches with ORV use.

Organisms found in the wrack are an important food source for shorebirds that nest and migrate through the beach. During the fall shorebird migration (mid-July to mid-September), 1,000-1,500 shorebirds use the Refuge beach as a resting and foraging area. The Refuge was recently designated as a Western Hemisphere Shorebird Reserve Network site because of its importance as a migratory stopover site.

While ORV use disturbs foraging and resting shorebirds that migrate through the Refuge, in general, ORV use adds minimally to shorebird disturbance as the beach is open to other public activities. However, a Refuge study did find that vehicle use on beaches disturbs roosting shorebirds more than pedestrian use (Harrington and Drilling 1996). A possible explanation for this may be that ORVs are active at night, when most shorebirds are roosting. ORVs allow anglers to get to more remote area (between lot 3 and lot 5) that would otherwise have low public use and thus low disturbance rates. ORV use reduces food resources and increases disturbance, contributing to lower weight shorebirds. Lower weight individuals are less likely to successfully complete their long-distance migrations (Harrington and Drilling 1996). The North Atlantic Shorebird Plan identified protection of food resources and minimizing human disturbance as high priority management objectives (Clark and Niles 2003).

Anglers access the beach via two over-sand trails through the dunes. Impacts associated with these accesses could include destruction of dune plants, sand displacement and compaction, degradation of water quality, and spread of invasive species. Wheels driving over the dunes destroy dune plants that stabilize the dunes, displace sand on the surface and compress sand at depth; thus contributing to dune erosion. In 2004, the North Beach Access was rerouted around a cranberry bog due to the discovery of a rare plant that is found nowhere else on the Refuge. The South Beach Access cuts through a population of seabeach needlegrass (*Aristida tuberculosa*), a State-listed threatened species. Refuge staff has found tire ruts within the population of seabeach needlegrass where vehicles have pulled off to the side to either let other vehicles pass or to turn around.

#### **PUBLIC REVIEW AND COMMENT:**

This Compatibility Determination is provided for public comment for a 14-day period, from December 15 to 29, 2004. Availability of the draft CD is advertised through a legal notice in the local newspaper, press release, flyers at the Refuge entrance gate and other public areas, and through the Refuge's web site.

#### **DETERMINATION (check one below):**

☐ Use is Not Compatible

☒ Use is Compatible With the Following Stipulations

#### **STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- Ensure that vehicles do not run over wrack nor driving near the base of foredune nor drive on wet sand.
- Increase law enforcement presence on beach during ORV-fishing season, particularly at night, to ensure compliance with Refuge regulations. Continue to enforce regulation that all visitors with vehicles on the beach must be actively engaged in fishing activities.

- Continue permit system to alleviate cost of administering the program, track ORV user and provide minimization measures and regulations to users. Have all ORV users sign a form acknowledging that they have read and understood all regulations related to ORV use. Consider holding training session to explain regulations and measures to minimize impacts of ORV beach use.
- Continue use of day-time parking to minimize conflict with other beach users.
- Restrict time, place, speed limit, and number of vehicles as needed to minimize impacts to wildlife and other users.
- Continue sign-in system to track users on the beach and enforce the 2-night maximum.
- Continue to restrict ORV use during the plover season to minimize impacts of nesting plovers and least terns. Study how ORV use at night is impacting roosting shorebirds during the fall migration.
- Establish a pull-off area along South Beach Access to minimize impact to State-listed seabeach needlegrass.

#### **LITERATURE CITED:**

**Anders, F. and S. Leatherman. 1987.** Distance of beach sediment by off-road vehicles. *Environmental Geologic Water Science*. v9(3):183-189

**Clark, K.E. and L.J. Nile. 2003.** Northern Atlantic Regional Shorebird Plan. A report of the Northern Atlantic Shorebird Habitat Working Group. New Jersey Division of Fish and Wildlife, Endangered and Nongame Species Program. Woodbine, New Jersey. 28pp.

**Godfrey, P. and M. Godfrey. 1980.** Ecological effects of off-road vehicles on Cape Cod. *Oceanus*. v23 (4): 56-67

**Harrington, B.A., and N. Drilling. 1996.** Investigations of effects of disturbance to migratory shorebirds at migration stopover sites on the U.S. Atlantic Coast. A report to the U.S. Fish & Wildlife Service, Region 5, Migratory Bird Program. Hadley, Massachusetts. 87 pp.

**Husgen, Christopher. Pers. Comm..** Law Enforcement Officer for Parker River Refuge. Personal communication with Nancy Pau, Refuge Operation Specialist. September 2004. Parker River National Wildlife Refuge. Newburyport, Massachusetts.

**Steinback, J.M.K., H.S. Ginsberg, and R.M. Cerrato. In press.** The effect of off-road vehicles (ORVs) on beach invertebrates in the northeastern United States. University of Rhode Island Doctoral Thesis. Kingston, Rhode Island.

**Wolcott, T.G. and D.L. Wolcott. 1984.** Impact of off-road vehicles on macroinvertebrates of a mid-Atlantic beach. *Biological Conservation*. 29:217-240.

Signature – Refuge Manager: \_\_\_\_\_  
(Signature and Date)

Concurrence – Regional Chief: \_\_\_\_\_  
(Signature and Date)

Mandatory 10 – year Reevaluation Date: \_\_Dec. 31, 2009\_\_\_\_\_